



P000046, Phenotypic Microarray of Microbes, 3.0 Hp

Syllabus

Finalized by: Finalized by: Vicedekan FU-LTV, 2023-09-11, 2023-09-11

Level within study regulation:

Third cycle

Subject:

- Horticulture
- Plant Protection Biology

Grading scale:

Pass / Failed

Course language:

Swedish

Entry requirements:

Admitted to the PhD education.

Basic knowledge in biology, microbiology, horticulture, ecology, plant protection biology or related fields. Basic knowledge in R studio is mandatory.

Objectives:

After completion of the course, the students should be able to:

- Demonstrate understanding of the physiological principles behind phenotypic microarray and associated ecological principles
- Demonstrate a good practical knowledge of the phenotypic microarray methodology and its limitations
- Demonstrate ability to be in command of planning and conducting phenotypic microarray as well as calculate and analyse obtained data
- Demonstrate ability to foresee pitfalls and develop solutions
- Demonstrate capacity to independently develop ideas for additional applications

Content:

The course deals with microbial physiology and introduces students at postgraduate level to phenotyping of bacteria, fungi and human cell lines based on their capacity to metabolize sole nutrient sources. The course is divided into four sections: (i) theoretical (physiological background of phenotyping based on nutritional preferences, associated ecological principles), (ii) practical (preparing and running phenotypic microarray using own isolates), (iii) calculation of data output and (iv) additional applications.

The course consist of a remote part and a laboratory training part conducted on the SLU campus in Alnarp. Laboratory training is alternated with lectures and workshops on basics and concepts related to phenotypic microarray. Both the remote and the on-site part are mandatory.

The remote part consists of literature preparations (3 days) and compiling of a study report (2 days). Each student will do hand-on training of phenotypic microarray using a bacterial pure culture, and participants are invited to bring a bacterial pure culture from their experimental work on the course. Retrieved data is analysed using R. The on-site part lasts 5 days.

There are two exams: the literature exam is given as a digital quiz prior to the hands-on training; the study report is handed in at the end of the course.

Modes of assessment:

Examination

Passed quiz

Approved laboratory report

According to the grading criteria the student has passed if:

The candidate is in good command of the basic fact within the framework of the stipulated content

- 75% of the given answers in the digital quiz is correct.

The candidate is in good command of the basic fact and considerations for conducting phenotypic microarray

- 75% of the given answers in the digital quiz is correct.

Evaluate, calculate and discuss lab results using phenotypic microarray and present procedures and analysis in a writing in a scientific way.

Critically assess and analyze pitfalls and limitations as well as develop decisive solutions and present them in writing in a scientific way.

Present a graphical abstract for a future theme/problem applying phenotypic microarray as a technique. - If a student has failed an examination, the examiner has the right to issue supplementary assignments. This applies if it is possible and there are grounds to do so.

- The examiner can provide an adapted assessment to students entitled to study support for students with disabilities following a decision by the university. Examiners may also issue an adapted examination or provide an alternative way for the students to take the exam.
- If this syllabus is withdrawn, SLU may introduce transitional provisions for examining students admitted based on this syllabus and who have not yet passed the course.
- For the assessment of an independent project (degree project), the examiner may also allow a student to add supplemental information after the deadline for submission. Read more in the Education Planning and Administration Handbook.

Organisation:

Department of Biosystems and Technology

Supplementary information

Other information:

- The right to participate in teaching and/or supervision only applies for the course instance the student was admitted to and registered on.

- If there are special reasons, students are entitled to participate in components with compulsory attendance when the course is given again. Read more in the Education Planning and Administration Handbook.